

What is claimed is:

1. A method of dispensing electrically charged particles of a coating material, the method including providing a source of the coating material, providing a supply of electrical charge, providing a dispenser for dispensing the charged particles of coating material, providing on the dispenser a first electrode, coupling the source of coating material to the dispenser, providing at least one second electrode at a location removed from the first electrode, and coupling both the first electrode and the at least one second electrode to the supply of electrical charge.
2. The method of claim 1 wherein providing a source of coating material and providing a dispenser include providing a fluidized bed in which the coating material is fluidized in a transporting medium and providing a dispenser for dispensing the coating material fluidized in the transporting medium.
3. The method of claim 2 wherein providing a dispenser includes providing a generally cup-shaped component having a perimetally extending lip, providing a diffuser component having a perimetally extending lip, and defining between the lips of the generally cup-shaped component and diffuser component a discharge region.
4. The method of claim 3 wherein providing a first electrode includes providing the first electrode on the diffuser component.
5. The method of claim 4 wherein providing the diffuser component includes providing a diffuser component having a first side facing generally toward the generally cup-shaped component and a second side facing generally away from the cup-shaped component, and providing the first electrode includes providing the first electrode on the second side of the diffuser component.
6. The method of claim 5 wherein providing the first electrode includes providing a first electrode having a perimetral lip adjacent to the perimetally extending lip of the diffuser component.
7. The method of claim 6 further including providing a rotator for rotating the dispenser during dispensing of the coating material.
8. The method of claim 7 further including mounting the diffuser component on the generally cup-shaped component and rotating the diffuser component as the generally cup-shaped component is rotated.
9. The method of claim 8 wherein providing at least one second electrode includes providing multiple second electrodes and arraying the multiple second

electrodes around an axis of rotation of the generally cup-shaped component and the diffuser component at a distance from the discharge region.

10. The method of claim 9 wherein providing multiple second electrodes comprises providing multiple needle-like second electrodes.

5 11. The method of claim 7 further including providing a housing for housing the rotator, providing the rotator including providing a rotator having an output shaft for mounting the dispenser, providing on the housing an opening through which the output shaft is accessible to mount the dispenser, providing at least one second electrode including providing multiple second electrodes, and arraying the multiple second electrodes around an
10 axis of rotation of the dispenser.

12. The method of claim 11 wherein arraying the multiple second electrodes around an axis of rotation of the generally cup-shaped component and the diffuser component includes arraying the multiple second electrodes around an axis of rotation of the dispenser at a first distance from the discharge region greater than a second distance from the
15 discharge region to the first electrode.

13. The method of claim 12 wherein arraying the multiple second electrodes around an axis of rotation of the dispenser at a first distance from the discharge region greater than a second distance from the discharge region to the first electrode further includes arraying the multiple second electrodes around an axis of rotation of the generally
20 cup-shaped component and the diffuser component in a first direction from the discharge region opposite a second direction from the discharge region to the first electrode.

14. The method of claim 7 further including providing a housing for housing the rotator, providing the rotator including providing a rotator having an output shaft for mounting the dispenser, providing on the housing an opening through which the output
25 shaft is accessible to mount the dispenser, providing at least one second electrode including providing multiple second electrodes, arraying the multiple second electrodes around an axis of rotation of the dispenser in a first direction from the discharge region opposite a second direction from the discharge region to the first electrode.

15. The method of claim 1 further comprising providing a rotator for
30 rotating the dispenser during dispensing of the coating material, providing a housing for housing the rotator, the rotator having an output shaft for mounting the dispenser, providing on the housing an opening through which the output shaft is accessible to mount the dispenser, providing the at least one second electrode including arraying multiple second

electrodes around an axis of rotation of the dispenser, and coupling both the first electrode and the at least one second electrode to the supply of electrical charge including coupling both the first electrode and the multiple second electrodes to the supply of electrical charge.

16. The method of claim 15 wherein providing a dispenser includes providing a dispenser defining a discharge region from which the coating material is discharged, and providing multiple second electrodes includes arraying the multiple second electrodes around an axis of rotation of the dispenser at a first distance from the discharge region greater than a second distance from the discharge region to the first electrode.

17. The method of claim 16 wherein arraying the multiple second electrodes around an axis of rotation of the dispenser at a first distance from the discharge region greater than a second distance from the discharge region to the first electrode includes arraying the multiple second electrodes around an axis of rotation of the dispenser in a first direction from the discharge region opposite a second direction from the discharge region to the first electrode.

18. The method of claim 15 wherein arraying the multiple second electrodes around an axis of rotation of the dispenser includes arraying the multiple second electrodes around an axis of rotation of the dispenser in a first direction from the discharge region opposite a second direction from the discharge region to the first electrode.

19. Apparatus for dispensing electrically charged particles of a coating material, the apparatus including a port through which coating material is introduced, a terminal through which electrical charge is introduced, a dispenser for dispensing the charged particles of coating material, a first electrode provided on the dispenser, the port being coupled to the dispenser, and at least one second electrode at a location removed from the first electrode, both the first electrode and the at least one second electrode being coupled to the terminal.

20. The apparatus of claim 19 further including a source of coating material for coupling to the port.

21. The apparatus of claim 20 wherein the source comprises a fluidized bed in which the coating material is fluidized in a transporting medium and the dispenser comprises a dispenser for dispensing the coating material fluidized in the transporting medium.

22. The apparatus of claim 21 wherein the dispenser includes a generally cup-shaped component having a perimetally extending lip, the dispenser further including a

diffuser component having a perimetally extending lip, and a discharge region defined between the lips of the generally cup-shaped component and diffuser component.

23. The apparatus of claim 22 wherein the first electrode is provided on the diffuser component.

5 24. The apparatus of claim 23 wherein the diffuser component includes a first side facing generally toward the generally cup-shaped component and a second side facing generally away from the cup-shaped component, the first electrode provided on the second side of the diffuser component.

25. The apparatus of claim 24 wherein the first electrode includes a
10 perimetral lip adjacent to the perimetally extending lip of the diffuser component.

26. The apparatus of claim 25 further including a rotator for rotating the dispenser during dispensing of the coating material.

27. The apparatus of claim 26 wherein the diffuser component is mounted on the generally cup-shaped component.

15 28. The apparatus of claim 27 wherein the at least one second electrode includes multiple second electrodes arrayed around an axis of rotation of the generally cup-shaped component and the diffuser component at a distance from the discharge region.

29. The apparatus of claim 28 wherein the multiple second electrodes comprise multiple needle-like second electrodes.

20 30. The apparatus of claim 19 further comprising a rotator for rotating the dispenser during dispensing of the coating material, a housing for housing the rotator, the rotator having an output shaft for mounting the dispenser, the housing including an opening through which the output shaft is accessible to mount the dispenser, the at least one second electrode including multiple second electrodes arrayed around an axis of rotation of the
25 dispenser, both the first electrode and the multiple second electrodes being coupled to the terminal.

31. The apparatus of claim 30 wherein the dispenser defines a discharge region from which the coating material is discharged, the multiple second electrodes are arrayed around an axis of rotation of the dispenser at a first distance from the discharge
30 region greater than a second distance from the discharge region to the first electrode.

32. The apparatus of claim 31 wherein the multiple second electrodes are arrayed around an axis of rotation of the dispenser in a first direction from the discharge region opposite a second direction from the discharge region to the first electrode.

33. The apparatus of claim 30 wherein the dispenser defines a discharge region from which the coating material is discharged, the multiple second electrodes arrayed around an axis of rotation of the dispenser in a first direction from the discharge region opposite a second direction from the discharge region to the first electrode.